

## **Evaluation of the environmental impact of industrial zones in new cities. Case Study: 10th of Ramadan City**

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### **Abstract**

The planning of Industrial Areas in new cities in Egypt has their special design standards stemming from the needs of the society, its economy and climate characteristics. However, it can effectively take advantage of the experiences of the developed countries in this field; either condition was similar or different to get to the environmental sustainability of these cities.

As the Arab Republic of Egypt suffers from the presence of contemporary gap between local and international standards in the field of environment. Egypt is in dire need for the application of the principles of sustainability in all fields, the most important industry because of its large share in energy consumption.

In order to achieve the aim of the research, was the exposure to different ways of environmental assessment matrix such as foundations and environmental standards and the African Index City Index dimension to assess the industrial areas in the cities, and then try to gain access to the methodology in the context of the most important determinants affecting the performance of the region as a whole and of energy, water, and transport emissions and air resources and waste. The research has come to the positives and negatives for the new cities, of the Arab Republic of Egypt and put the necessary recommendations to take advantage of the positives and avoid the negatives.

One of the most important goals that must be achieved in the research is to measure the extent to which modern environmental sustainability standards are achieved for Egyptian industrial cities, and to achieve the sustainability of industrial projects, taking into account the human and environmental dimension in planning the new industrial areas.

Discussing and determining the impact of urban planning for new cities on environmental issues and defining a clear framework for the relationship between these two elements in order to overcome environmental problems in the new industrial cities, while achieving a great deal of sustainable green development in them.

Study and analyze examples of environmentally sustainable industrial cities, know the vocabulary and modern technologies used in design, and know the extent of potential.

Providing environmental and recreational services with sufficient space for the industrial area. Paying attention to open green areas through the proliferation of afforestation, the use of tall trees and the distribution of green areas in the area and within the scope of environmental protection between the industrial and residential areas, and penetration into the area well.

Industry is considered the gradient in the first stage of education, and the industrial sector is occupied in one year, is scheduled to start in one year, and is scheduled to start in one year from where it started to grow. Developing economic development, reducing focus on imports and

increasing energy. The problem becomes clear in field and environmental studies, the common environment to environmental problems and environmental pollution that increased the complexities of life in industrial cities. The research methodology is based on two complementary main frameworks in order to achieve the objectives of the study, and they are as follows: The theoretical framework is based on knowledge of the basic concepts related to sustainability and green development standards in industrial cities through a comprehensive survey of studies and research in this field, especially in the aspect of planning theories related to the city's components, framework and trends, as well as with regard to standards related to services, public facilities and general planning projects such as regions residential, industrial, green and open areas.

The analytical framework focuses on the nature of practice and application at the global level in a global industrial city by studying and analyzing the elements and capabilities used to solve environmental problems in all their contents and applying global environmental assessments and how to achieve sustainability in them and then applying to a new industrial city in Egypt through a case study of these. The city is based on the current situation and a comparison between the study cases, which will reach solutions and proposals to solve environmental problems and achieve sustainable development in them.

#### **Environmental assessment of industrial zones in Egypt:**

New Egyptian cities are cities that were created in many governorates of Egypt in the last three decades, as these cities were planned according to the latest planning systems, and it was taken into account to establish them away from the narrow strip of the Nile Valley, in order to limit the urban sprawl on agricultural lands.

#### **New industrial cities in the governorates of Egypt:**

Industrial zones contribute to bringing about changes in the natural and social environment in order to advance the necessary standards of living and economy, and the establishment of the industrial zone with good environmental conditions requires sustainable planning and operation that takes into account the various environmental and social aspects related to the proposed development.

#### **Concept of industrial pollution:**

It is those damages that are caused to the ecosystem as a result of the industrial activity of the industrial establishment, and diminish its ability to provide a healthy physical, psychological, social and moral life for human beings. These damages usually result from the behavior of the industrial establishment in its endeavor to maximize profit without taking into account the surrounding environment, which is polluted with the waste of these operation. In spite of the efforts made at the national and global levels, the situation is getting worse, due to the steady and rapid growth in technologies that are newly used in the industry.

#### **The study included four parts as follows:**

**1-**deals with the discussion of the industrial city of origination and sustainability.

**2-d**eals with the concept of industrial zones from an environmental perspective.

**3-** deals with the study and analysis of examples of global environmentally sustainable industrial cities.

**4-** deals with the suggested sustainable methodology for the design of new industrial zones in Egypt.

### **Three Parts have been addressed through the identification of the following sections:**

**The first section deals with the discussion of the industrial city of origination and sustainability.**

Origins and evolution of the industry in Egypt and the world.

Has addressed study the genesis of the industry in Egypt and the world and the development of industry in Egypt and its role in raising the wheel of the Egyptian economy and strategic directions for the Egyptian industry.

The impact of industrial ecology on the development of industrial zones.

Chapter displays industrial pollution and its impact on the environment and trading. View definition of sustainable development principles to arrive at a definition of sustainable city.

Also addressed renewable energies and strategy in Egypt and their application, and the emergence of science industrial ecology.

**The second section deals with the concept of industrial zones from an environmental perspective.**

The concept of the industrial zone within the emergence of new industrial cities concepts:

The Chapter discusses the reasons for the emergence of new cities in Egypt and then the stages of the emergence of the industrial areas in these cities and their types and their role in development.

This deals with the explanation of the planning and design and environmental standards for the industrial zone and the relationship of the region, including around the other uses and strategy use and application of renewable energy and green design in the region.

**The third part deals with the study and analysis of examples of global and regional environmentally sustainable industrial cities.**

Discussion and Analysis of global industrial zones in the global Sustainable Cities.

The city of Hamburg, Germany, and the Japanese city of Kawasaki and the Saudi city of Yanbu on the basis of a clean environmental planning and the use of clean renewable energies to produce environmental sustainability.

**The Part IV deals with Sustainable proposed methodology for the design of new industrial zones in Egypt.**

Study and analysis of examples of new industrial zones in Egypt.

The study dealt with the industrial areas in the new Egyptian cities and their environmental problems and assessing global environmental assessments. Study takes 3 cities under study, the Tenth of Ramadan City and the city of New Damietta and the new city of Minya.

A vision of how to implement sustainability at the local town standards to reach an environmentally sustainable industrial city... Comparison between cities under study. The comparison with the environmental standards and foundations matrix shows that there is a big gap between the Egyptian cities under study and the environmentally sustainable global cities in terms of urban design for the region and the application of correct planning theories for the area, and attention to environmental aspects that help in finding solutions to environmental problems, in addition to the limitations in the use of clean renewable energies available, and the lack of interest in recycling waste, and the environmentally sustainable cities in the world to reach the desired goal and develop proposals to achieve their environmental sustainability. The research also recommended the necessity of applying sustainability criteria to local industrial areas in order to reach an environmentally sustainable industrial zone.

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